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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHEN, XIAOLIANG

ART UNIT

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2841

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11/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/588,556	Applicant(s) DEURINGER ET AL.	
	Examiner Xiaoliang Chen	Art Unit 2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5,7-15,18,19 and 21-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-15,18,19 and 21-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-27-09 has been entered.

Amendment

2. Acknowledgement is made of Amendment filed 10-27-09.
3. Claims 1, 15 and 21 are amended.
4. Claims 2, 3, 6, 16, 17 and 20 are canceled.

Response to Arguments

5. Applicant's arguments with respect to claims 1 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

6. Claims 4, 14, 18 and 28 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous

Art Unit: 2841

claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Since the limitations of claims 4, 14, 18 and 28 are already cited in the new amended independent claims 1 and 15 respectively, therefore, claims 4, 14, 18 and 28 should be canceled or amended.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 4, 5, 7, 14, 15, 18, 19, 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian (US5913688) in view of. Kaczmarek et al. (US6542577).

Art Unit: 2841

Re Claim 1, Marian show and disclose

A housing having a liquid-tight electric bushing comprising:

an opening in the housing (opening of the sealed housing 36, fig. 3A);

a printed circuit board (34, fig. 3A) mounted to the housing and having at least first and second layers (73 and 70, fig. 5), the at least first and second layers being configured without a continuous opening (opening for 72 and 68, fig. 5) such that the printed circuit board is a liquid-tight closure (the housing adapted for sealing with the printed wiring board [claim 1]) for the liquid-tight housing, the first layer being produced from an electrical insulation material (dielectric layer, [col. 8, line 2]) and being top side of the printed circuit board that spans the opening (fig. 3A) and the second layer being a conductor track (conductive trace 70, fig. 5) in the interior of the printed circuit board,

wherein a first contact element (72, fig. 5) is disposed on the top side and in a bore through the first layer (a hole through 73, fig. 5) that extends to at least the second layer (70, fig. 5).

Marian does not disclose

a housing for an X-ray tube, wherein a coolant oil is circulated through the housing at an overpressure to cool the X-ray tube during operation; the liquid-tight closure that prevents the cooling oil from flowing outside of the housing;

Kaczmarek et al. teaches a device wherein

a housing (36, fig. 1) for an X-ray tube (14), wherein a coolant oil (32) is circulated through the housing at an overpressure to cool the X-ray tube during

Art Unit: 2841

operation (fig. 1); the liquid-tight closure that prevents the cooling oil from flowing outside of the housing (fig. 1);

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the circuit board to seal the housing with cooling oil of Kaczmarek et al. as in the liquid-tight sealed housing of Marian, in order to provide a seal which resists leakage of cooling oil from the housing (Kaczmarek et al., [Abstract]), and since Marian states in Claim 1, that the housing adapted for sealing with the printed wiring board.

Re Claim 15, Marian show and disclose

A method of using a printed circuit board to close an opening provided in a housing and as an electric bushing comprising:

mounting the printed circuit board (34, fig. 3A) comprising a first layer (73) on the housing (36), the printed circuit board having no continuous opening (opening for 72 and 68, fig. 5) such that the printed circuit board is a liquid-tight closure (the housing adapted for sealing with the printed wiring board [claim 1]) for the liquid-tight housing, wherein the first layer spans the opening (opening of the housing, fig. 3A) and is the top side of the printed circuit board (fig. 3A) and is produced from an electrical insulation material (dielectric layer, [col. 8, line 2]),

disposing a first contact element (72, fig. 5) on the top side and through a bore (a hole through 73, fig. 5) in the top side, wherein the bore extends to at least a second layer (70, fig. 5) formed in the printed circuit board as a conductor track (conductive trace, fig. 5);

Art Unit: 2841

Marian does not disclose

a housing for an X-ray tube, wherein a coolant oil is circulated through the housing at an overpressure to cool the X-ray tube during operation; the liquid-tight closure that prevents the cooling oil from flowing to the outside of the housing;

Kaczmarek et al. teaches a device wherein

a housing (36, fig. 1) for an X-ray tube (14), wherein a coolant oil (32) is circulated through the housing at an overpressure to cool the X-ray tube during operation (fig. 1); the liquid-tight closure that prevents the cooling oil from flowing to the outside of the housing (fig. 1);

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the circuit board to seal the housing with cooling oil of Kaczmarek et al. as in the liquid-tight sealed housing of Marian, in order to provide a seal which resists leakage of cooling oil from the housing (Kaczmarek et al., [Abstract]), and since Marian states in Claim 1, that the housing adapted for sealing with the printed wiring board.

Re Claims 4 and 18, Marian show and disclose

According to claims 1 and 15 respectively, wherein the first layer is an electrical insulation material (see claims 1 and 15, and claim objections above).

Re Claims 5 and 19, Marian show and disclose

According to claims 1 and 15 respectively, wherein the first contact element is coupled to a second contact element (68, fig. 5) via the second layer.

Re Claims 7 and 21, Marian show and disclose

According to claims 1 and 15 respectively, wherein the second contact element is on an underside (bottom) that is opposite the top side (fig. 5).

Re Claims 14 and 28, Kaczmarek et al. and Marian disclose

According to claims 1 and 15 respectively, wherein the housing further comprises an X-ray tube (see claims 1 and 15, and claim objections above).

10. Claims 8, 12, 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian in view of Kaczmarek et al. as applied to claims 1, 5, 15 and 19 above, further in view of Rockwood et al. (US6316768).

Re Claims 8 and 22, Marian and Kaczmarek et al. disclose

According to claims 5 and 19 respectively,

Marian and Kaczmarek et al. do not disclose

wherein the second contact element extends to an outside an edge of the printed circuit board.

Rockwood et al. teaches a device wherein

the second contact element extends to an outside an edge of the printed circuit board (extension part of 102, extends to outside the side edge of the printed circuit board, fig. 8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the contact element extends to outside of the edge of the printed circuit board as taught by Rockwood et al in the printed circuit board of Marian, in order to able to electrically couple from inside

Art Unit: 2841

sealed chamber 92, 94 to outside (Rockwood et al., Para. [col. 13, line 37]), and also be able to electrically couple the electrical device 106 inside the sealed chamber to the outside of the electronic device (Rockwood et al., Para. [col. 13, line 46]).

Re Claims 12 and 26, Marian and Kaczmarek et al. disclose

According to claims 1 and 15 respectively,

Marian and Kaczmarek et al. do not disclose

wherein a seal is disposed between the printed circuit board and the housing.

Rockwood et al. teaches a device wherein

a seal (O-ring 96, fig. 8) is disposed between the printed circuit board and the housing.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the O-ring as taught by Rockwood et al. in the electronic device of Marian, in order to be able to get a better sealing between the printed circuit board and the housing of the chamber.

11. Claims 9-11 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian in view of Kaczmarek et al. as applied to claims 1, 5, 15 and 24 above, further in view of Powell (US6931723).

Re Claims 9-10 and 23-24, Marian and Kaczmarek et al. disclose

According to claims 1 and 15 respectively,

Marian and Kaczmarek et al. do not disclose

Art Unit: 2841

wherein the printed circuit board is flexible comprises a plurality of second layers, located one above the other,

Powell teaches a device wherein

wherein the printed circuit board is flexible (flexible circuit [col. 4, line 51]) comprises a plurality of second layers (interior conductive layers 5, fig. 8 and fig. 11), located one above the other (fig. 11),

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the flexible circuit board with the plurality of interior conductive layers as taught by Powell in the electronic device of Marian, in order to seal the opening of the electronic device more tightly and be able to make more electrical connections for the electronic device.

Re Claims 11 and 25, Marian and Kaczmarek et al. disclose

According to claims 5 and 24 respectively, the first contact element and the second contact element are coupled via a conductor track (70, fig. 5),
Marian and Kaczmarek et al. do not disclose

the first contact element and the second contact element are coupled via a plurality of conductor tracks, which are located one above the other and electrically coupled;

Powell teaches a device wherein

the first contact element and the second contact element are coupled via a plurality of conductor tracks (interior conductive layers 5, fig. 8 and fig. 11), which are located one above the other and electrically coupled (fig. 5);

Art Unit: 2841

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the plurality of interior conductive layers as taught by Powell in the electronic device of Marian, in order to be able to make more electrical connections for the electronic device.

12. Claims 13 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marian in view of Kaczmarek et al. and Rockwood et al. as applied to claims 12 and 26 above, further in view of Tilton et al. (US6108201).

Re Claims 13 and 27, Marian, Kaczmarek et al. and Rockwood et al. disclose
According to claims 12 and 26 respectively,

Marian Kaczmarek et al. and Rockwood et al. do not disclose

wherein a pressure plate contacts the underside of the printed circuit board and presses the printed circuit board against the seal.

Tilton et al. teaches a device wherein

a pressure plate (508, fig. 5) contacts the underside of the printed circuit board and presses the printed circuit board against the seal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the pressure plate as taught by Tilton et al. in the electronic device of Marian, in order to be able to reinforce and protect the printed circuit board in the electronic device.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiaoliang Chen whose telephone number is (571)272-9079. The examiner can normally be reached on 8:00-5:00 (EST), Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jinhee Lee can be reached on 571-272-1977. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Xiaoliang Chen/
Examiner, Art Unit 2841

Xiaoliang Chen
Examiner
Art Unit 2841